



Commonwealth of the Northern Mariana Islands



Territorial Climate and Infrastructure Workshop Water Infrastructure Project

Sustainable Water Infrastructure Management Strategy Program

Commonwealth Utilities Corporation
March 2022



Presentation Snapshot



- I. Introductions***
- II. CUC Water System and Current Challenges***
- III. Goals and Benefits***
- IV. CUC SWIMS Program Details***
- V. Cost Savings Benefits***
- VI. Future Water Quality Improvement Plan***
- VII. Questions and Comments***



Introductions



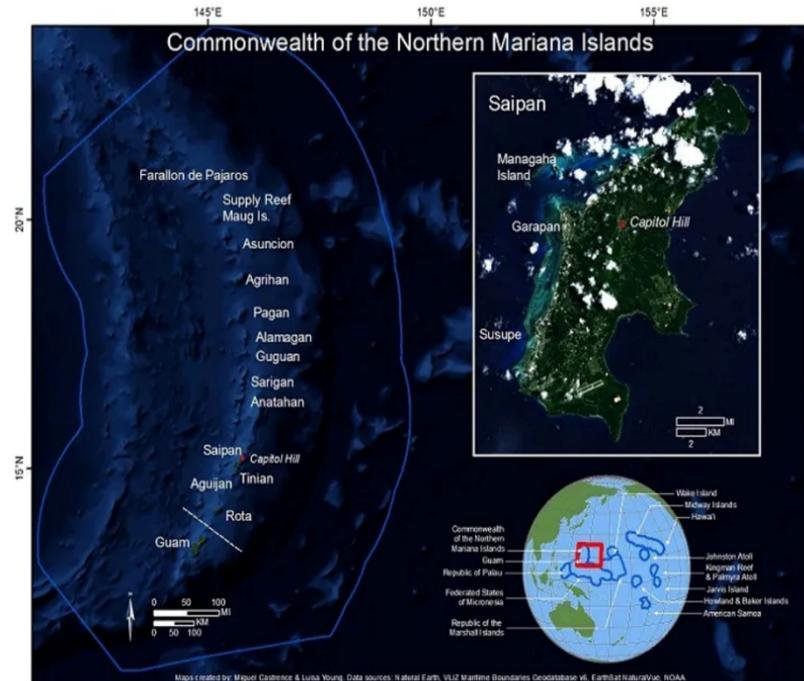
❖ Commonwealth Utilities Corporation

❖ *The CNMI's only public owned utility which provides critical Power, Water and Wastewater services to the island of Saipan, Tinian and Rota.*

❖ *Gary P. Camacho,
CUC Executive Director*

❖ *Larry T. Manacop,
CUC Acting W&WW
Chief Engineer*

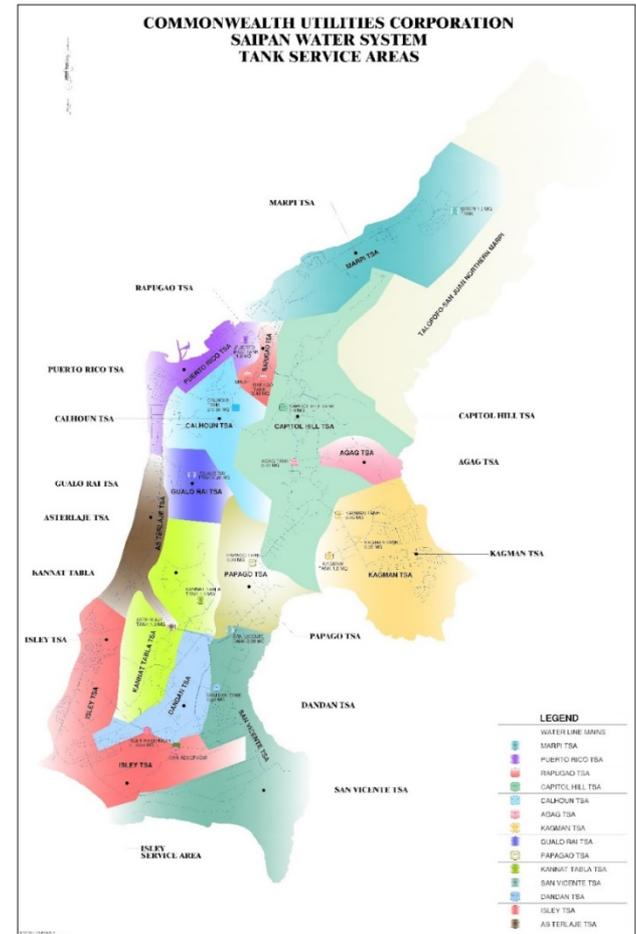
❖ *Yvonne C. Ogumoro,
CUC Acting W&WW
Division Manager*



CUC's Current Water System



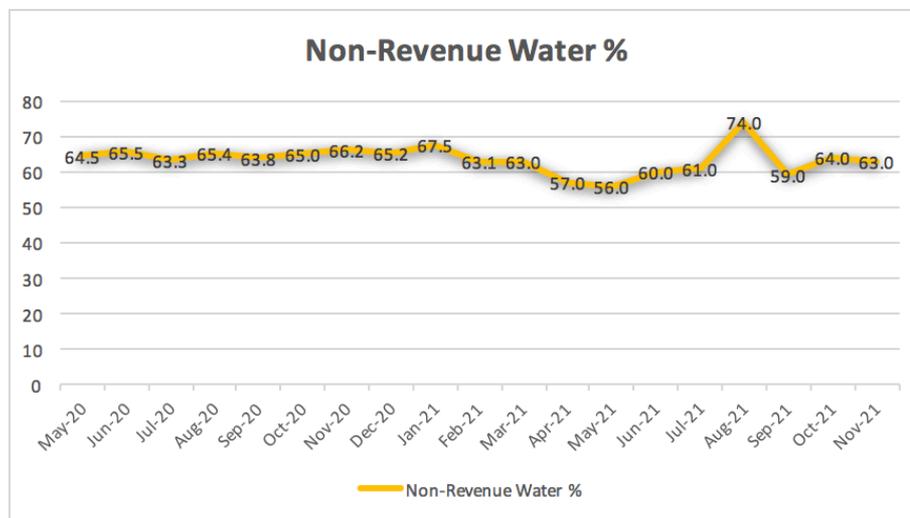
- ❖ **Population Served: 47,329**
- ❖ **Water Source: 138**
Underground Wells;
1-Spring; 2-Maui Shaft Wells
- ❖ **Water Production: 10 MGD**
- ❖ **14 Tank Service Areas**
- ❖ **10,000 Customers**
- ❖ **About 380 Miles of Distribution and Transmission Mains**
- ❖ **Non-Revenue Water: 60%**





CUC's Challenges

- ❖ **Water Quality**
- ❖ **Non-Revenue Water Percentage – 60%**
- ❖ **Preventative Maintenance**



System Input Volume (Produced or Purchased Water)	Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption	Revenue Water
		Unbilled Authorized Consumption	Billed Unmetered Consumption	Non Revenue Water (NRW)
Water Losses	Real Losses	Apparent Losses	Unauthorized Consumption	
			Customer Meter Inaccuracies and Data Handling Errors	
Water Losses	Real Losses	Real Losses	Leakage in Transmission and Distribution Mains	Non Revenue Water (NRW)
			Storage Leaks and Overflows from Storage Tanks	
Water Losses	Real Losses	Real Losses	Service Connection Leaks up to the Meter	Non Revenue Water (NRW)
			Service Connection Leaks up to the Meter	



Water Infrastructure Priority Project

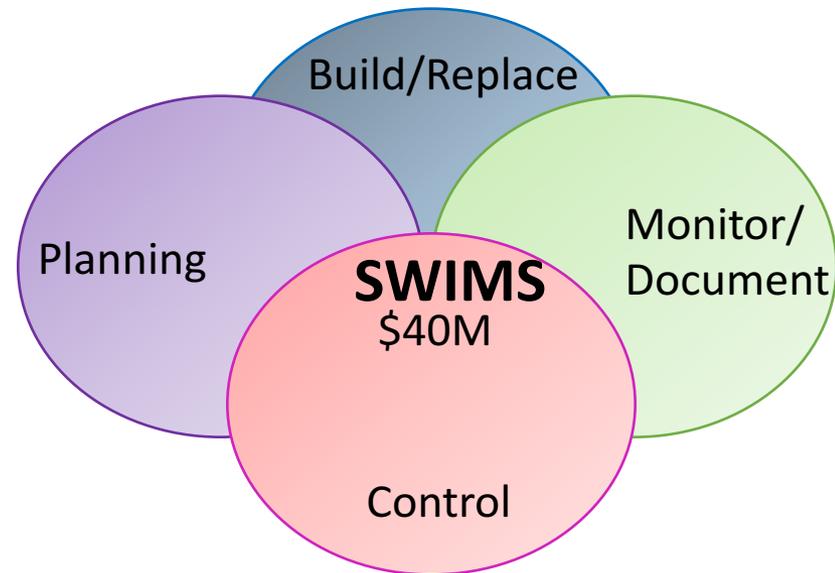


❖ *Priority needs/projects and strategies to support the successful implementation of projects supported by the Bipartisan Infrastructure Law (BIL)*

❖ **CUC Sustainable Water Infrastructure Management (SWIMS) Program**

❖ **PROGRAM DESCRIPTION:**

A comprehensive planning, investigation, design, construction, and operations approach to manage Non-Revenue Water and deliver 24-hour safe and affordable drinking water to meet secondary standards for the Commonwealth of the Northern Mariana Islands.





SWIMS Program Goals and Benefits

6 CLEAN WATER AND SANITATION



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Goals:

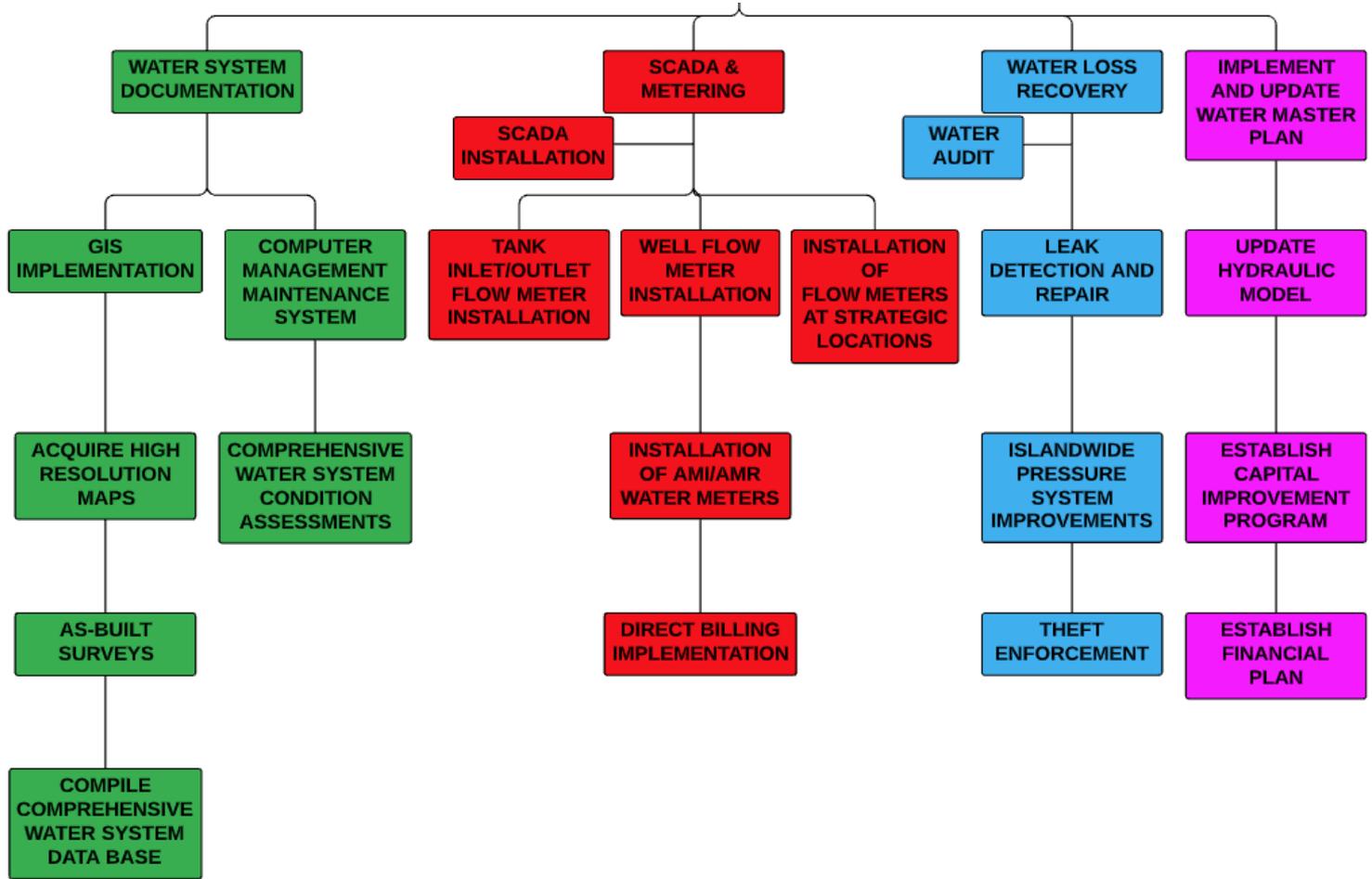
- ❖ *To improve water quality to meet secondary standards which is in line with the CNMI's Comprehensive Sustainable Development Goals (CSDG)*
- ❖ *Reduce Non-Revenue-Water to 20%*
- ❖ *Create a Preventive Maintenance Program*

Benefits:

- ❖ *Improve daily livelihood*
- ❖ *Support and encourage economic growth*
- ❖ *Improve water quality*
- ❖ *Improve consumer confidence*
- ❖ *Comply with Federal Regulatory Requirements*
- ❖ *Reduce water rates by reducing operating cost*
- ❖ *Reduce dependency on fossil fuel*



Sustainable Water Infrastructure Management Strategy Program Tasks



SWIMS Program Goals and Benefits



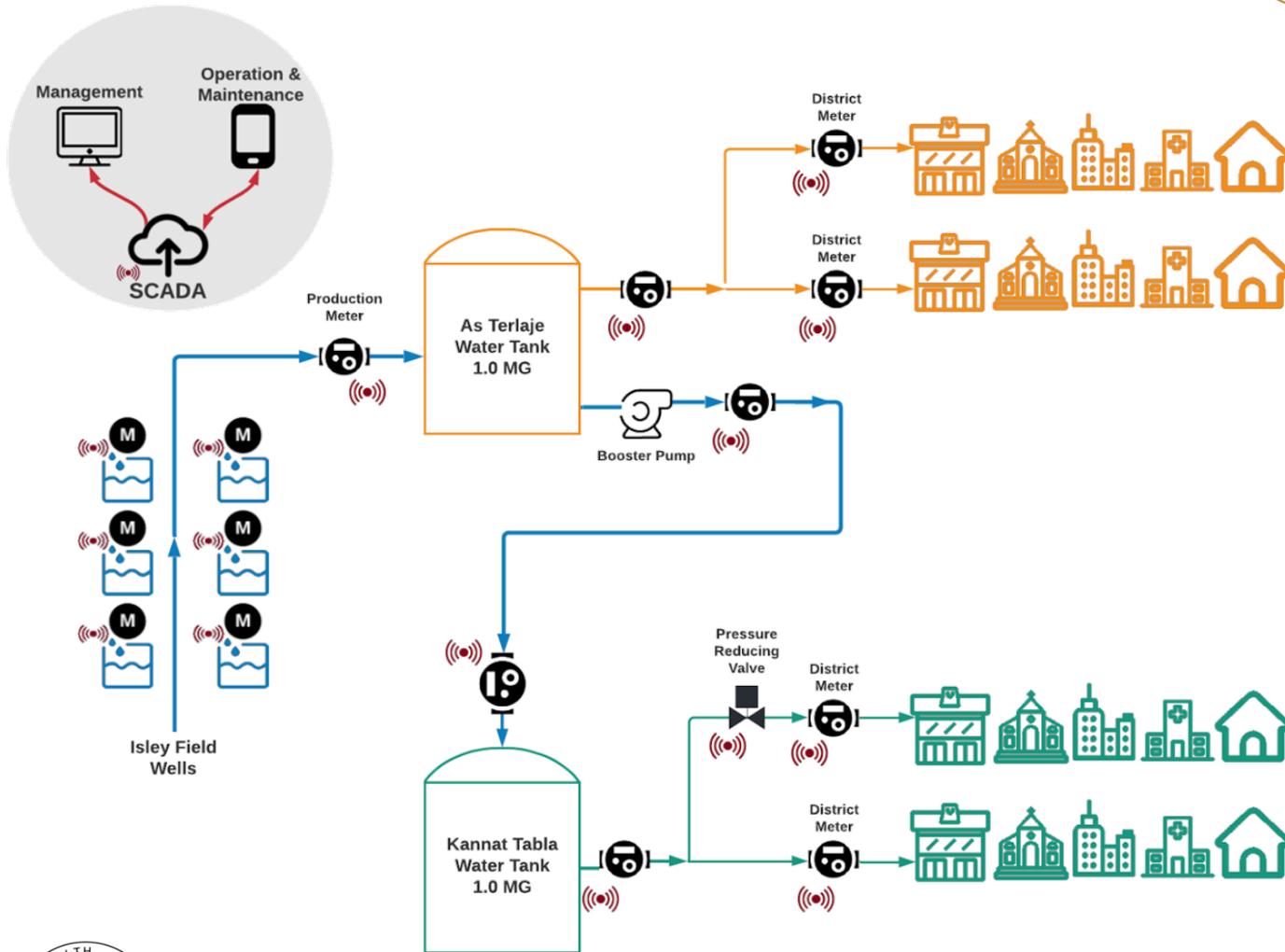
- ❖ **Task 1: Hire Program Manager**

- ❖ **Task 2: SCADA and Metering**
 - 2.1 Installation of tank inlet and outlet flow meters**
 - 2.2 Installation of well flow meters**
 - 2.3 Installation of AMI/AMR flow meters at all residential and commercial customers**
 - 2.4 Installation of district flow meters**
 - 2.5 Installation of SCADA system**
 - 2.6 Implementation of direct billing system**

- ❖ **Task 3: Water System Documentation**
 - 3.1 Acquire high resolution maps**
 - 3.2 Implement GIS**
 - 3.3 Perform As-Built Surveys**
 - 3.4 Compile comprehensive Water system data base**
 - 3.5 CMMS-Perform condition assessment**



CUC SWIMS Program



Sustainable Water Infrastructure Management Strategy Program



❖ Task 4: Water Loss Recovery

4.1 Perform Water Audit

4.2 Perform Leak Detection and Repair

4.3 Islandwide Pressure System Improvement

4.4 Theft Enforcement

❖ Task 5: Implement and Update Water Master Plan

5.1 Update Master Plan

5.2 Update Hydraulic Model

5.3 Establish Capitol Improvement Program

5.4 Establish Financial Plan



Cost Estimate and Schedule



	BUDGET	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5				
		Q1	Q2	Q3	Q4																	
1.0 ESTABLISH PROGRAM MANAGEMENT OFFICE																						
2.0 SCADA AND METERING																						
2.1 Installation of Tank Inlet & Outlet Flow Meters																						
2.2 Installation of Well Flow Meters																						
2.3 Installation of AMI/AMR Water Meters																						
2.4 Installation of Flow Meters at Strategic Locations																						
2.5 Installation of SCADA System																						
2.6 Implementation of Direct Billing System																						
Sub-Total																						
3.0 WATER SYSTEM DOCUMENTATION																						
3.1 Acquire High Resolution Maps																						
3.2 Implement GIS																						
3.3 Perform As-Built Surveys																						
3.4 Compile Comprehensive Water System Data Base																						
3.5 CMMIS-Perform Condition Assessment																						
Sub-Total																						
4.0 WATER LOSS RECOVERY																						
4.1 Perform Water Audit																						
4.2 Perform Leak Detection and Repair																						
4.3 Islandwide Pressure System Improvements																						
4.4 Theft Enforcement																						
Sub-Total																						
5.0 IMPLEMENT AND UPDATE WATER MASTER PLAN																						
5.1 Update Master Plan																						
5.2 Update Hydraulic Model																						
5.3 Establish Capital Improvement Program																						
5.4 Establish Financial Plan																						
Sub-Total																						
GRAND TOTAL	\$ 40,000,000.00																					



Cost Estimate and Schedule



❖ *Energy Savings Cost Analysis*

❖ *Average Daily Water Production: 10MG/D*

❖ *Average Monthly Water Production: 300MG/Month*

❖ *Percent Average Non-Revenue Water: 63%*

❖ *189MG/Month Water Loss*

❖ *Potential Cost Savings:*

❖ *Assume 20% Reduction in NRW to 43%*

❖ *$34,946,100 \times \$0.058020/\text{gal.} = \$2,027,573/\text{Month}$*

❖ *~\$24.3M/year*



Future Water Quality Improvement Programs



❖ Groundwater Management Plan

- ❖ Proper groundwater management is critical to keeping water supplies available and sustainable. This program will supplement the NRW program with our goal of providing palatable and safe drinking water in the CNMI.*
- ❖ Develop a Comprehensive Drought Plan and Water Budget Studies.*



Questions and Comments



*Si Yu'us Ma'ase,
Olomwaay, Mahalo and
Thank you!*

6 CLEAN WATER
AND SANITATION



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



11 SUSTAINABLE CITIES
AND COMMUNITIES



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION

